



SEQUENCE LISTING

#9

<110> Lukyanov, Sergey
Fradkov, Arcady F.
Labas, Yulii A.
Matz, Mikhail V.
Terskikh, Alexey

<120> Novel Chromophores/Fluorophores and
Methods for Using the Same

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<141> 2001-12-04

<150> 09/120,330

<151> 1998-12-11

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<151> 1999-11-19

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<212> DNA

<213> anemonia majano

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tatgaagatg gaggagtgtc tacagccagt tgggaaataa gccttaaagg caactgcttt 360

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ggatgatgtca ccgcgttcct catgctgcaa ggaggtggca attacagatg ccaattccac 540
actttcttaca agacaaaaaa accggtgacg atgccaccaa accatgcggt ggaacatcgc 600
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<210> 2

<211> 229

<212> PRT

<213> anemonia majano

<400> 2

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Thr	Val	Phe	Lys	Tyr	Gly	Asn	Arg	Cys	Phe	Thr	Ala	Tyr	Pro	Thr	Ser
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Met	Pro	Asp	Tyr	Phe	Lys	Gln	Ala	Phe	Pro	Asp	Gly	Met	Ser	Tyr	Glu
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Arg	Thr	Phe	Thr	Tyr	Glu	Asp	Gly	Gly	Val	Ala	Thr	Ala	Ser	Trp	Glu
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Ile	Ser	Leu	Lys	Gly	Asn	Cys	Phe	Glu	His	Lys	Ser	Thr	Phe	His	Gly
		115				120						125			
Val	Asn	Phe	Pro	Ala	Asp	Gly	Pro	Val	Met	Ala	Lys	Met	Thr	Thr	Gly
		130				135					140				
Trp	Asp	Pro	Ser	Phe	Glu	Lys	Met	Thr	Val	Cys	Asp	Gly	Ile	Leu	Lys
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Cys	Gln	Phe	His	Thr	Ser	Tyr	Lys	Thr	Lys	Lys	Pro	Val	Thr	Met	Pro
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Pro	Asn	His	Ala	Val	Glu	His	Arg	Ile	Ala	Arg	Thr	Asp	Leu	Asp	Lys
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<213> Clavularia species

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atactgaaaa catatttgtc tgagggtttg tgttgttttt taaaagacat cagctcagca 1020
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<210> 4

<211> 266

<212> PRT

<213> Clavularia species

<400> 4

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      20             25             30
Thr Leu Arg Ile Pro Lys Ala Leu Thr Thr Met Gly Val Ile Lys Pro
      35             40             45
Asp Met Lys Ile Lys Leu Lys Met Glu Gly Asn Val Asn Gly His Ala
      50             55             60
Phe Val Ile Glu Gly Glu Gly Glu Lys Pro Tyr Asp Gly Thr His
      65             70             75             80
Thr Leu Asn Leu Glu Val Lys Glu Gly Ala Pro Leu Pro Phe Ser Tyr
      85             90             95
Asp Ile Leu Ser Asn Ala Phe Gln Tyr Gly Asn Arg Ala Leu Thr Lys
      100            105            110
Tyr Pro Asp Asp Ile Ala Asp Tyr Phe Lys Gln Ser Phe Pro Glu Gly
      115            120            125
Tyr Ser Trp Glu Arg Thr Met Thr Phe Glu Asp Lys Gly Ile Val Lys
      130            135            140
Val Lys Ser Asp Ile Ser Met Glu Glu Asp Ser Phe Ile Tyr Glu Ile
      145            150            155            160
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Arg Phe Asp Gly Met Asn Phe Pro Pro Asn Gly Pro Val Met Gln Lys
 165 170 175
 Lys Thr Leu Lys Trp Glu Pro Ser Thr Glu Ile Met Tyr Val Arg Asp
 180 185 190
 Gly Val Leu Val Gly Asp Ile Ser His Ser Leu Leu Leu Glu Gly Gly
 195 200 205
 Gly His Tyr Arg Cys Asp Phe Lys Ser Ile Tyr Lys Ala Lys Lys Val
 210 215 220
 Val Lys Leu Pro Asp Tyr His Phe Val Asp His Arg Ile Glu Ile Leu
 225 230 235 240
 Asn His Asp Lys Asp Tyr Asn Lys Val Thr Leu Tyr Glu Asn Ala Val
 245 250 255
 Ala Arg Tyr Ser Leu Leu Pro Ser Gln Ala
 260 265

<210> 5
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 <212> DNA
 <213> Zoanthus species

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 aaacaggcta ttaatctgtg tgtggtcgaa ggtggacat tgccatttgc cgaagacata 180
 ttgtcagctg cctttatgta cggaaacagg gttttcactg aatatacctca agacatagct 240
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<210> 6
 <211> 231
 <212> PRT
 <213> Zoanthus species

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 Gly Ile Gly Tyr Pro Phe Lys Gly Lys Gln Ala Ile Asn Leu Cys Val
 35 40 45
 Val Glu Gly Gly Pro Leu Pro Phe Ala Glu Asp Ile Leu Ser Ala Ala
 50 55 60
 Phe Asn Tyr Gly Asn Arg Val Phe Thr Glu Tyr Pro Gln Asp Ile Ala
 65 70 75 80

Asp Tyr Phe Lys Asn Ser Cys Pro Ala Gly Tyr Thr Trp Asp Arg Ser
 85 90 95
 Phe Leu Phe Glu Asp Gly Ala Val Cys Ile Cys Asn Ala Asp Ile Thr
 100 105 110
 Val Ser Val Glu Glu Asn Cys Met Tyr His Glu Ser Lys Phe Tyr Gly
 115 120 125
 Val Asn Phe Pro Ala Asp Gly Pro Val Met Lys Lys Met Thr Asp Asn
 130 135 140
 Trp Glu Pro Ser Cys Glu Lys Ile Ile Pro Val Pro Lys Gln Gly Ile
 145 150 155 160
 Leu Lys Gly Asp Val Ser Met Tyr Leu Leu Leu Lys Asp Gly Gly Arg
 165 170 175
 Leu Arg Cys Gln Phe Asp Thr Val Tyr Lys Ala Lys Ser Val Pro Arg
 180 185 190
 Lys Met Pro Asp Trp His Phe Ile Gln His Lys Leu Thr Arg Glu Asp
 195 200 205
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 210 215 220
 Ala Ser Gly Ser Ala Leu Pro
 225 230

<210> 7

<211> 865

<212> DNA

<213> Zoanthus species

<400> 7

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 gaaacagact attaattctgt gtgtgatcga agggggacca ttgccatttt ccgaagacat 240
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 ggatggagca gtctgcatat gcaatgtaga tataacagtg agtgtcaaag aaaactgcat 420
 ttatcataag agcatattta atggaatgaa ttttcctgct gatggacctg tgatgaaaaa 480
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 gttcgacaca gtttacaaag caaagtctgt gccaaagtaag atgccggagt ggcacttcat 660
 ccagcataag ctctccgtg aagaccgcag cgatgctaag aatcagaagt ggcagctgac 720
 agagcatgct attgcattcc cttctgcctt ggctgataa gaatgtagtt ccaacatttt 780
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 caaataaagc acatgtaaat cgtct 865

<210> 8

<211> 230

<212> PRT

<213> Zoanthus species

<400> 8

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20	25	30	
Gly Ile Gly Tyr Pro Phe Lys Gly	Lys Gln Thr Ile Asn Leu Cys Val		
35	40	45	
Ile Glu Gly Gly Pro Leu Pro Phe Ser	Glu Asp Ile Leu Ser Ala Gly		
50	55	60	
Phe Lys Tyr Gly Asp Arg Ile Phe Thr	Glu Tyr Pro Gln Asp Ile Val		
65	70	75	80
Asp Tyr Phe Lys Asn Ser Cys Pro Ala	Gly Tyr Thr Trp Gly Ser Phe		
85	90	95	
Leu Phe Glu Asp Gly Ala Val Cys Ile	Cys Asn Val Asp Ile Thr Val		
100	105	110	
Ser Val Lys Glu Asn Cys Ile Tyr His	Lys Ser Ile Phe Asn Gly Met		
115	120	125	
Asn Phe Pro Ala Asp Gly Pro Val Met	Lys Lys Met Thr Thr Asn Trp		
130	135	140	
Glu Ala Ser Cys Glu Lys Ile Met Pro	Val Pro Lys Gln Gly Ile Leu		
145	150	155	160
Lys Gly Asp Val Ser Met Tyr Leu Leu	Leu Lys Asp Gly Gly Arg Tyr		
165	170	175	
Arg Cys Gln Phe Asp Thr Val Tyr Lys	Ala Lys Ser Val Pro Ser Lys		
180	185	190	
Met Pro Glu Trp His Phe Ile Gln His	Lys Leu Leu Arg Glu Asp Arg		
195	200	205	
Ser Asp Ala Lys Asn Gln Lys Trp Gln	Leu Thr Glu His Ala Ile Ala		
210	215	220	
Phe Pro Ser Ala Leu Ala			
225	230		

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 <211> 850
 <212> DNA
 <213> *Disosoma striata*

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 aggttaccaa ggggtggacct ctgccatttg gttggcatat tttgtgccca caatttcagt 240
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 aattcatgaa agttgaggag catgaaatcg ccgttgacag ccaccatccg ctccaaagcc 720
 aatgaagctt aagtaaagca aaaaggtgac gaggcagat agtatgacat gatagtatga 780
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850

<210> 10

<211> 227

<212> PRT

<213> Discosoma striata

<400> 10

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Gly Lys Gly Lys Pro Asn Glu Gly Thr Asn Thr Val Thr Leu Glu Val
      35           40           45
Thr Lys Gly Gly Pro Leu Pro Phe Gly Trp His Ile Leu Cys Pro Gln
      50           55           60
Phe Gln Tyr Gly Asn Lys Ala Phe Val His His Pro Asp Asp Ile Pro
65           70           75           80
Asp Tyr Leu Lys Leu Ser Phe Pro Glu Gly Tyr Thr Trp Glu Arg Ser
      85           90           95
Met His Phe Glu Asp Gly Gly Leu Cys Cys Ile Thr Asn Asp Ile Ser
      100          105          110
Leu Thr Gly Asn Cys Phe Asn Tyr Asp Ile Lys Phe Thr Gly Leu Asn
      115          120          125
Phe Pro Pro Asn Gly Pro Val Val Gln Lys Lys Thr Thr Gly Trp Glu
      130          135          140
Pro Ser Thr Glu Arg Leu Tyr Pro Arg Asp Gly Val Leu Ile Gly Asp
145          150          155          160
Ile His His Ala Leu Thr Val Glu Gly Gly Gly His Tyr Val Cys Asp
      165          170          175
Ile Lys Thr Val Tyr Arg Ala Lys Lys Pro Val Lys Met Pro Gly Tyr
      180          185          190
His Tyr Val Asp Thr Lys Leu Val Ile Arg Ser Asn Asp Lys Glu Phe
      195          200          205
Met Lys Val Glu Glu His Glu Ile Ala Val Ala Arg His His Pro Leu
      210          215          220
Gln Ser Gln
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<210> 11

<211> 678

<212> DNA

<213> Discosoma species

<400> 11

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ttgtcaccac aatttcagta tggaagcaag gtatatgtca agcaccctgc cgacatacca 240
gactataaaa agctgtcatt tcctgaagga tttaaagggt aaagggtcat gaactttgaa 300
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atgggctggg aagccagcac tgagcgtttg tatcctcgtg atggcgtgtt gaaaggagag 480
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tacatggcaa agaagcctgt gcagctacca ggggtactact atgttgactc caaactggat 600
ataacaagcc acaacgaaga ctatacaatc gttgagcagt atgaaagaac cgaggggacgc 660
caccatctgt tcctttaa 678

<210> 12

<211> 225

<212> PRT

<213> Discosoma species

<400> 12

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			20					25					30		
Gly	Glu	Gly	Arg	Pro	Tyr	Glu	Gly	His	Asn	Thr	Val	Lys	Leu	Lys	Val
			35				40					45			
Thr	Lys	Gly	Gly	Pro	Leu	Pro	Phe	Ala	Trp	Asp	Ile	Leu	Ser	Pro	Gln
	50					55					60				
Phe	Gln	Tyr	Gly	Ser	Lys	Val	Tyr	Val	Lys	His	Pro	Ala	Asp	Ile	Pro
65					70					75				80	
Asp	Tyr	Lys	Lys	Leu	Ser	Phe	Pro	Glu	Gly	Phe	Lys	Trp	Glu	Arg	Val
				85					90					95	
Met	Asn	Phe	Glu	Asp	Gly	Gly	Val	Val	Thr	Val	Thr	Gln	Asp	Ser	Ser
			100					105					110		
Leu	Gln	Asp	Gly	Cys	Phe	Ile	Tyr	Lys	Val	Lys	Phe	Ile	Gly	Val	Asn
		115					120					125			
Phe	Pro	Ser	Asp	Gly	Pro	Val	Met	Gln	Lys	Lys	Thr	Met	Gly	Trp	Glu
						135						140			
Ala	Ser	Thr	Glu	Arg	Leu	Tyr	Pro	Arg	Asp	Gly	Val	Leu	Lys	Gly	Glu
145					150					155				160	
Ile	His	Lys	Ala	Leu	Lys	Leu	Lys	Asp	Gly	Gly	His	Tyr	Leu	Val	Glu
				165					170					175	
Phe	Lys	Ser	Ile	Tyr	Met	Ala	Lys	Lys	Pro	Val	Gln	Leu	Pro	Gly	Tyr
			180					185					190		
Tyr	Tyr	Val	Asp	Ser	Lys	Leu	Asp	Ile	Thr	Ser	His	Asn	Glu	Asp	Tyr
		195					200					205			
Thr	Ile	Val	Glu	Gln	Tyr	Glu	Arg	Thr	Glu	Gly	Arg	His	His	Leu	Phe
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Leu															
225															

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<211> 696

<212> DNA

<213> Anemonia sulcata

<400> 13

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atgaagatag aggtcatcga aggaggtcca ttgccatttg ccttcacacat tttgtcaacg 180
agttgtatgt acggtagtaa ggccttcacg aagtatgtgt caggaattcc tgactacttc 240
aagcagtctt tccctgaagg ttttacttgg gaaagaacca caacctacga ggatggaggc 300
tttcttacag ctcatcagga cacaagccta gatggagatt gcctcgttta caaggtcaag 360
attcttggtg ataattttcc tgctgatggc cccgtgatgc agaacaagc aggaagatgg 420
gagccatcca ccgagatagt ttatgaagtt gacggtgtcc tgcgtggaca gtctttgatg 480
gcccttaagt gccctggtgg tcgtcatctg acttgccatc tccatactac ttacaggtcc 540
aaaaaaccag ctgctgcctt gaagatgccg ggatttcatt ttgaagatca tcgcatcgag 600
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<211> 232

<212> PRT

<213> Anemonia sulcata

<400> 14

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 20          25          30
Asn Pro Phe Glu Gly Thr Gln Glu Met Lys Ile Glu Val Ile Glu Gly
 35          40          45
Gly Pro Leu Pro Phe Ala Phe His Ile Leu Ser Thr Ser Cys Met Tyr
 50          55          60
Gly Ser Lys Thr Phe Ile Lys Tyr Val Ser Gly Ile Pro Asp Tyr Phe
 65          70          75          80
Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Thr Tyr
 85          90          95
Glu Asp Gly Gly Phe Leu Thr Ala His Gln Asp Thr Ser Leu Asp Gly
100          105          110
Asp Cys Leu Val Tyr Lys Val Lys Ile Leu Gly Asn Asn Phe Pro Ala
115          120          125
Asp Gly Pro Val Met Gln Asn Lys Ala Gly Arg Trp Glu Pro Ala Thr
130          135          140
Glu Ile Val Tyr Glu Val Asp Gly Val Leu Arg Gly Gln Ser Leu Met
145          150          155          160
Ala Leu Lys Cys Pro Gly Gly Arg His Leu Thr Cys His Leu His Thr
165          170          175
Thr Tyr Arg Ser Lys Lys Pro Ala Ala Leu Lys Met Pro Gly Phe
180          185          190
His Phe Glu Asp His Arg Ile Glu Ile Met Glu Glu Val Glu Lys Gly
195          200          205
Lys Cys Tyr Lys Gln Tyr Glu Ala Ala Val Gly Arg Tyr Cys Asp Ala
210          215          220
Ala Pro Ser Lys Leu Gly His Asn
225          230
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<210> 15
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 <212> DNA
 <213> Discosoma species

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 ccataaccagg gatcacagga gttaaccttg acggtgggta aaggcggggcc tctgcctttc 240
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 gaggacatac cagatatattt caagcagacc tgttctgggc ctaatgggtg atattcctgg 360
 caaaggacca tgacttatga agacggaggc gtttgcactg ctacaagcaa catcagcgtg 420
 gttggcgaca ctttcaatta tgacattcac tttatgggag cgaattttcc tcttgatggg 480
 ccagtgatgc agaaaagaac aatgaaatgg gaaccatcca ctgagataat gtttgaacgt 540
 gatggaatgc tgaggggtga cattgccatg tctctgttgc tgaagggagg gggccattac 600
 cgatgtgatt ttgaaactat ttataaaccc aataaggttg tcaagatgcc agattaccat 660
 tttgtggacc actgcattga gataacgagt caacaggatt attacaacgt ggttgagctg 720
 accgaggttg ctgaagcccg ctactcttcg ctggagaaaa tcggcaaata aaaggcgtaa 780
 atccaagcaa tctaagaaaa caacaaggca ttaaaccgaa tcaccgtttt gaatttttcg 840
 ttcggaattt cttggtaaaa ctaggttttag aacgtttcat ttcgctggac ttctttgact 900
 cagctgtaga caagaaaga 919

<210> 16
 <211> 231
 <212> PRT
 <213> Discosoma species

<400> 16
 Met Ser Ala Leu Lys Glu Glu Met Lys Ile Asn Leu Thr Met Glu Gly
 1 5 10 15
 Val Val Asn Gly Leu Pro Phe Lys Ile Arg Gly Asp Gly Lys Gly Lys
 20 25 30
 Pro Tyr Gln Gly Ser Gln Glu Leu Thr Leu Thr Val Val Lys Gly Gly
 35 40 45
 Pro Leu Pro Phe Ser Tyr Asp Ile Leu Thr Thr Met Phe Gln Tyr Gly
 50 55 60
 Asn Arg Ala Phe Val Asn Tyr Pro Glu Asp Ile Pro Asp Ile Phe Lys
 65 70 75 80
 Gln Thr Cys Ser Gly Pro Asn Gly Gly Tyr Ser Trp Gln Arg Thr Met
 85 90 95
 Thr Tyr Glu Asp Gly Gly Val Cys Thr Ala Thr Ser Asn Ile Ser Val
 100 105 110
 Val Gly Asp Thr Phe Asn Tyr Asp Ile His Phe Met Gly Ala Asn Phe
 115 120 125
 Pro Leu Asp Gly Pro Val Met Gln Lys Arg Thr Met Lys Trp Glu Pro
 130 135 140
 Ser Thr Glu Ile Met Phe Glu Arg Asp Gly Met Leu Arg Gly Asp Ile
 145 150 155 160
 Ala Met Ser Leu Leu Leu Lys Gly Gly Gly His Tyr Arg Cys Asp Phe
 165 170 175

Glu Thr Ile Tyr Lys Pro Asn Lys Val Val Lys Met Pro Asp Tyr His
 180 185 190
 Phe Val Asp His Cys Ile Glu Ile Thr Ser Gln Gln Asp Tyr Tyr Asn
 195 200 205
 Val Val Glu Leu Thr Glu Val Ala Glu Ala Arg Tyr Ser Ser Leu Glu
 210 215 220
 Lys Ile Gly Lys Ser Lys Ala
 225 230

<210> 17
 <211> 876
 <212> DNA
 <213> Discosoma species

<400> 17
 agtttcagcc agtgacaggg tgagctgccca ggtattctaa caagatgagt tgttccaaga 60
 atgtgatcaa ggagttcatg aggttcaagg ttcgtatgga aggaacgggc aatgggacag 120
 agtttgaaat aaaaggcgaa ggtgaaggga ggccttacga aggtcactgt tccgtaaagc 180
 ttatggtaac caagggtgga cctttgccat ttgcttttga tattttgtca ccacaatttc 240
 agtatggaag caaggtatat gtcaaacacc ctgccgacat accagactat aaaaagctgt 300
 catttcctga gggatttaaa tgggaaaggg tcatgaactt tgaagacggg gccgtgggta 360
 ctgtatccca agattccagt ttgaaagacg gctgtttcat ctacgagggc aagttcattg 420
 ggggtgaactt tccttctgat ggacctgtta tgcagaggag gacacggggc tgggaagcca 480
 gctctgagcg tttgtatcct cgtgatgggg tgctgaaagg agacatccat atggctctga 540
 ggctggaagg aggcggccat tacctcgttg aattcaaaag tatttacatg gtaaagaagc 600
 cttcagtga gttgccaggc tactattatg ttgactccaa actggatatg acgagccaca 660
 acgaagatta cacagtcgtt gagcagtagt aaaaaaccca gggacgccac catccgttca 720
 ttaagcctct gcagtgaact cggctcagtc atggattagc ggtaatggcc acaaaggcca 780
 cgatgatcgt tttttaggaa tgcagccaaa aattgaagggt tatgacagta gaaatacaag 840
 caacaggctt tgcttattaa acatgtaatt gaaaaac 876

<210> 18
 <211> 230
 <212> PRT
 <213> Discosoma species

<400> 18
 Met Ser Cys Ser Lys Asn Val Ile Lys Glu Phe Met Arg Phe Lys Val
 1 5 10 15
 Arg Met Glu Gly Thr Val Asn Gly His Glu Phe Glu Ile Lys Gly Glu
 20 25 30
 Gly Glu Gly Arg Pro Tyr Glu Gly His Cys Ser Val Lys Leu Met Val
 35 40 45
 Thr Lys Gly Gly Pro Leu Pro Phe Ala Phe Asp Ile Leu Ser Pro Gln
 50 55 60
 Phe Gln Tyr Gly Ser Lys Val Tyr Val Lys His Pro Ala Asp Ile Pro
 65 70 75 80
 Asp Tyr Lys Lys Leu Ser Phe Pro Glu Gly Phe Lys Trp Glu Arg Val
 85 90 95
 Met Asn Phe Glu Asp Gly Gly Val Val Thr Val Ser Gln Asp Ser Ser

	100		105		110										
Leu	Lys	Asp	Gly	Cys	Phe	Ile	Tyr	Glu	Val	Lys	Phe	Ile	Gly	Val	Asn
	115		120		125										
Phe	Pro	Ser	Asp	Gly	Pro	Val	Met	Gln	Arg	Arg	Thr	Arg	Gly	Trp	Glu
	130		135		140										
Ala	Ser	Ser	Glu	Arg	Leu	Tyr	Pro	Arg	Asp	Gly	Val	Leu	Lys	Gly	Asp
145			150		155				160						
Ile	His	Met	Ala	Leu	Arg	Leu	Glu	Gly	Gly	Gly	His	Tyr	Leu	Val	Glu
		165		170		175									
Phe	Lys	Ser	Ile	Tyr	Met	Val	Lys	Lys	Pro	Ser	Val	Gln	Leu	Pro	Gly
	180		185		190										
Tyr	Tyr	Tyr	Val	Asp	Ser	Lys	Leu	Asp	Met	Thr	Ser	His	Asn	Glu	Asp
	195		200		205										
Tyr	Thr	Val	Val	Glu	Gln	Tyr	Glu	Lys	Thr	Gln	Gly	Arg	His	His	Pro
	210		215		220										
Phe	Ile	Lys	Pro	Leu	Gln										
225			230												

<210> 19
 <211> 26
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 19
 atgtgcaata ccaacatgtc tgtacc

26

<210> 20
 <211> 21
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 20
 ctaggggaaa taagttagca c

21

<210> 21
 <211> 41
 <212> DNA
 <213> Artificial Sequence

<220>
 <223> Primer

<400> 21
 ggaattccag ccatggtgtg caataccaac atgtctgtac c

41

<210> 22
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 22
tcccccgagg ggaaataagt tagcac 26

<210> 23
<211> 31
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 23
acatggatcc aggtcttcca agaatttat c 31

<210> 24
<211> 26
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 24
tagtactcga gccaaagttca gcctta 26

<210> 25
<211> 30
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 25
acatggatcc agttgttcca agaattgat 30

<210> 26
<211> 27
<212> DNA
<213> Artificial Sequence

<220>
<223> Primer

<400> 26
tagtactcga ggccattacc gctaatac

27

<210> 27
<211> 690
<212> DNA
<213> Anemonia majano

<400> 27
atggccctgt ccaacgagtt catcggcgac gacatgaaga tgacctacca catggacggc 60
tgcgtgaacg gccactactt caccgtgaag ggcgagggca ggcgcaagcc ctacgagggc 120
accagacct ccaccttcaa ggtgaccatg gccaacggcg gccccctggc cttctccttc 180
gacatcctgt ccaccgtgtt catgtacggc aaccgctgct tcaccgccta cccaccagc 240
atgcccgaact acttcaagca ggccttcccc gacggcatgt cctacgagag aaccttcacc 300
tacgaggacg gcggcgtggc caccgccagc tgggagatca gcctgaaggg caactgcttc 360
gagcacaagt ccaccttcca cggcgtgaac ttccccgccg acggccccgt gatggccaag 420
aagaccaccg gctgggaccc ctccttcgag aagatgaccg tgtgcgacgg catcttgaag 480
ggcgacgtga ccgccttcct gatgctgcag ggcgcgggca actacagatg ccagttccac 540
acctcctaca agaccaagaa gcccgtagacc atgccccca accacgtggt ggagcaccgc 600
atcgccagaa ccgacctgga caagggcggc aacagcgtgc agctgaccga gcacgccgtg 660
gccacatca cctccgtggt gcccttctga 690

<210> 28
<211> 229
<212> PRT
<213> Anemonia majano

<400> 28
Met Ala Leu Ser Asn Glu Phe Ile Gly Asp Asp Met Lys Met Thr Tyr
1 5 10 15
His Met Asp Gly Cys Val Asn Gly His Tyr Phe Thr Val Lys Gly Glu
20 25 30
Gly Ser Gly Lys Pro Tyr Glu Gly Thr Gln Thr Ser Thr Phe Lys Val
35 40 45
Thr Met Ala Asn Gly Gly Pro Leu Ala Phe Ser Phe Asp Ile Leu Ser
50 55 60
Thr Val Phe Met Tyr Gly Asn Arg Cys Phe Thr Ala Tyr Pro Thr Ser
65 70 75 80
Met Pro Asp Tyr Phe Lys Gln Ala Phe Pro Asp Gly Met Ser Tyr Glu
85 90 95
Arg Thr Phe Thr Tyr Glu Asp Gly Gly Val Ala Thr Ala Ser Trp Glu
100 105 110
Ile Ser Leu Lys Gly Asn Cys Phe Glu His Lys Ser Thr Phe His Gly
115 120 125
Val Asn Phe Pro Ala Asp Gly Pro Val Met Ala Lys Lys Thr Thr Gly
130 135 140
Trp Asp Pro Ser Phe Glu Lys Met Thr Val Cys Asp Gly Ile Leu Lys
145 150 155 160
Gly Asp Val Thr Ala Phe Leu Met Leu Gln Gly Gly Gly Asn Tyr Arg
165 170 175
Cys Gln Phe His Thr Ser Tyr Lys Thr Lys Lys Pro Val Thr Met Pro

	180		185		190										
Pro	Asn	His	Val	Val	Glu	His	Arg	Ile	Ala	Arg	Thr	Asp	Leu	Asp	Lys
	195		200		205										
Gly	Gly	Asn	Ser	Val	Gln	Leu	Thr	Glu	His	Ala	Val	Ala	His	Ile	Thr
	210		215		220										
Ser	Val	Val	Pro	Phe											
225															

<210> 29
 <211> 705
 <212> DNA
 <213> Zoanthus species

<400> 29
 ggatccgctc agtcagagca cgggtctaaca gaagaaatga caatgaaata ccgtatggaa 60
 ggggtgcgtcg atggacataa atttgtgatac acgggagagg gcattggata tccgttcaaa 120
 gggaaacagg ctattaatct gtgtgtgggtc gaaggtggac cattgccatt tgccgaagac 180
 atattgtcag ctgcctttat gtacggaaac agggttttca ctgaatatcc tcaagacata 240
 gttgactatt tcaagaactc gtgtcctgct ggatatacat gggacagggtc ttttctcttt 300
 gaggatggag cagtttgcag atgtaatgca gatataacag tgagtgttga agaaaactgc 360
 atgtatcatg agtccaaatt ctatggagtg aattttcctg ctgatggacc tgtgatgaaa 420
 aagatgacag ataactggga gccatcctgc gagaagatca taccagtacc taagcagggg 480
 atattgaaag gggatgtctc catgtacctc cttctgaagg atggtgggcg tttacgggtgc 540
 caattcgaca cagtttaca agcaaagtct gtgccaaaga agatgccgga ctggcacttc 600
 atccagcata agtcaccccg tgaagaccgc agcgatgcta agaatacaga atggcatctg 660
 acagaacatg ctattgcatac cggatctgca ttgccctgaa agctt 705

<210> 30
 <211> 230
 <212> PRT
 <213> Zoanthus species

<400> 30
 Ala Gln Ser Glu His Gly Leu Thr Glu Glu Met Thr Met Lys Tyr Arg
 1 5 10 15
 Met Glu Gly Cys Val Asp Gly His Lys Phe Val Ile Thr Gly Glu Gly
 20 25 30
 Ile Gly Tyr Pro Phe Lys Gly Lys Gln Ala Ile Asn Leu Cys Val Val
 35 40 45
 Glu Gly Gly Pro Leu Pro Phe Ala Glu Asp Ile Leu Ser Ala Ala Phe
 50 55 60
 Met Tyr Gly Asn Arg Val Phe Thr Glu Tyr Pro Gln Asp Ile Val Asp
 65 70 75 80
 Tyr Phe Lys Asn Ser Cys Pro Ala Gly Tyr Thr Trp Asp Arg Ser Phe
 85 90 95
 Leu Phe Glu Asp Gly Ala Val Cys Ile Cys Asn Ala Asp Ile Thr Val
 100 105 110
 Ser Val Glu Glu Asn Cys Met Tyr His Glu Ser Lys Phe Tyr Gly Val
 115 120 125
 Asn Phe Pro Ala Asp Gly Pro Val Met Lys Lys Met Thr Asp Asn Trp

130		135		140
Glu Pro Ser Cys Glu Lys Ile Ile Pro Val Pro Lys Gln Gly Ile Leu				
145		150		155
Lys Gly Asp Val Ser Met Tyr Leu Leu Leu Lys Asp Gly Gly Arg Leu				
	165		170	175
Arg Cys Gln Phe Asp Thr Val Tyr Lys Ala Lys Ser Val Pro Arg Lys				
	180		185	190
Met Pro Asp Trp His Phe Ile Gln His Lys Leu Thr Arg Glu Asp Arg				
	195		200	205
Ser Asp Ala Lys Asn Gln Lys Trp His Leu Thr Glu His Ala Ile Ala				
	210		215	220
Ser Gly Ser Ala Leu Pro				
225		230		

<210> 31
 <211> 231
 <212> PRT
 <213> Zoanthus species

<400> 31

Met Ala Gln Ser Lys His Gly Leu Thr Lys Glu Met Thr Met Lys Tyr				
1	5	10	15	
Arg Met Glu Gly Cys Val Asp Gly His Lys Phe Val Ile Thr Gly Glu				
	20	25	30	
Gly Ile Gly Tyr Pro Phe Lys Gly Lys Gln Ala Ile Asn Leu Cys Val				
	35	40	45	
Val Glu Gly Gly Pro Leu Pro Phe Ala Glu Asp Ile Leu Ser Ala Gly				
	50	55	60	
Phe Lys Tyr Gly Asp Arg Val Phe Thr Glu Tyr Pro Gln Asp Ile Val				
65	70	75	80	
Asp Tyr Phe Lys Asn Ser Cys Pro Ala Gly Tyr Thr Trp Asp Arg Ser				
	85	90	95	
Phe Leu Phe Glu Asp Gly Ala Val Cys Ile Cys Asn Ala Asp Ile Thr				
	100	105	110	
Val Ser Val Glu Glu Asn Cys Met Tyr His Glu Ser Lys Phe Tyr Gly				
	115	120	125	
Val Asn Phe Pro Ala Asp Gly Pro Val Met Lys Lys Met Thr Asp Asn				
	130	135	140	
Trp Glu Pro Ser Cys Glu Lys Ile Ile Pro Val Pro Lys Gln Gly Ile				
145	150	155	160	
Leu Lys Gly Asp Val Ser Met Tyr Leu Leu Leu Lys Asp Gly Gly Arg				
	165	170	175	
Leu Arg Cys Gln Phe Asp Thr Val Tyr Lys Ala Lys Ser Val Pro Arg				
	180	185	190	
Lys Met Pro Asp Trp His Phe Ile Gln His Lys Leu Thr Arg Glu Asp				
	195	200	205	
Arg Ser Asp Ala Lys Asn Gln Lys Trp His Leu Thr Glu His Ala Ile				
	210	215	220	
Ala Ser Gly Ser Ala Leu Pro				
225		230		

<210> 32
 <211> 231
 <212> PRT
 <213> Zoanthus species

<400> 32
 Met Ala Gln Ser Lys His Gly Leu Thr Lys Glu Met Thr Met Lys Tyr
 1 5 10 15
 Arg Met Glu Gly Cys Val Asp Gly His Lys Phe Val Ile Thr Gly Glu
 20 25 30
 Gly Ile Gly Tyr Pro Phe Lys Gly Lys Gln Ala Ile Asn Leu Cys Val
 35 40 45
 Val Glu Gly Gly Pro Leu Pro Phe Ala Glu Asp Ile Leu Ser Ala Gly
 50 55 60
 Phe Lys Tyr Gly Asp Arg Val Phe Thr Glu Tyr Pro Gln Asp Ile Val
 65 70 75 80
 Asp Tyr Phe Lys Asn Ser Cys Pro Ala Gly Tyr Thr Trp Asn Arg Ser
 85 90 95
 Phe Leu Phe Glu Asp Gly Ala Val Cys Ile Cys Asn Ala Asp Ile Thr
 100 105 110
 Val Ser Val Glu Glu Asn Cys Val Tyr His Glu Ser Lys Phe Tyr Gly
 115 120 125
 Val Asn Phe Pro Ala Asp Gly Pro Val Met Lys Lys Met Thr Asp Asn
 130 135 140
 Trp Glu Pro Ser Cys Glu Lys Ile Ile Pro Val Pro Arg Gln Gly Ile
 145 150 155 160
 Leu Lys Gly Asp Val Ser Met Tyr Leu Leu Lys Asp Gly Gly Arg
 165 170 175
 Leu Arg Cys Gln Phe Asp Thr Val Tyr Lys Ala Lys Ser Val Pro Arg
 180 185 190
 Lys Met Pro Asp Trp His Phe Ile Gln His Lys Leu Thr Arg Glu Asp
 195 200 205
 Arg Ser Asp Ala Lys Asn Gln Lys Trp His Leu Thr Glu His Ala Ile
 210 215 220
 Ala Ser Gly Ser Ala Leu Ser
 225 230

<210> 33
 <211> 657
 <212> DNA
 <213> Zoanthus species

<400> 33
 taccacatgg agggctgcgt gaacggccac aagttcgtga tcaccggcga gggcatcggc 60
 tacccttca agggcaagca gaccatcaac ctgtgcgtga tcgagggcgg cccctgccc 120
 ttcagcgagg acatcctgag cgccggcttc aagtacggcg accggatctt caccgagtac 180
 cccagggaca tcgtggacta cttcaagaac agctgccccg cgggtacac ctggggccgg 240
 agcttctgt tcgaggacgg cgccgtgtgc atctgtaacg tggacatcac cgtgagcgtg 300
 aaggagaact gcatctacca caagagcatc ttcaacggcg tgaacttccc cgccgacggc 360

cccgtgatga agaagatgac caccaactgg gagggccagct gcgagaagat catgcccgtg 420
 cctaagcagg gcatcctgaa gggcgacgtg agcatgtacc tgctgctgaa ggacggcggc 480
 cggtagcggg gccagttcga caccgtgtac aaggccaaga gcgtgcccag caagatgccc 540
 gagtggcact tcatccagca caagctgctg cgggaggacc ggagcgacgc caagaaccag 600
 aagtggcagc tgaccgagca cgccatcgcc ttccccagcg ccctggcctg aaagctt 657

<210> 34

<211> 230

<212> PRT

<213> Zoanthus species

<400> 34

Ala	His	Ser	Glu	His	Gly	Leu	Thr	Glu	Glu	Met	Thr	Met	Lys	Tyr	His
1				5					10					15	
Met	Glu	Gly	Cys	Val	Asn	Gly	His	Lys	Phe	Val	Ile	Thr	Gly	Glu	Gly
			20					25					30		
Ile	Gly	Tyr	Pro	Phe	Lys	Gly	Lys	Gln	Thr	Ile	Asn	Leu	Cys	Val	Ile
		35					40					45			
Glu	Gly	Gly	Pro	Leu	Pro	Phe	Ser	Glu	Asp	Ile	Leu	Ser	Ala	Gly	Phe
		50				55					60				
Lys	Tyr	Gly	Asp	Arg	Ile	Phe	Thr	Glu	Tyr	Pro	Gln	Asp	Ile	Val	Asp
65				70					75					80	
Tyr	Phe	Lys	Asn	Ser	Cys	Pro	Ala	Gly	Tyr	Thr	Trp	Gly	Arg	Ser	Phe
			85					90					95		
Leu	Phe	Glu	Asp	Gly	Ala	Val	Cys	Ile	Cys	Asn	Val	Asp	Ile	Thr	Val
		100						105				110			
Ser	Val	Lys	Glu	Asn	Cys	Ile	Tyr	His	Lys	Ser	Ile	Phe	Asn	Gly	Val
		115				120						125			
Asn	Phe	Pro	Ala	Asp	Gly	Pro	Val	Met	Lys	Lys	Met	Thr	Thr	Asn	Trp
		130				135					140				
Glu	Ala	Ser	Cys	Glu	Lys	Ile	Met	Pro	Val	Pro	Lys	Gln	Gly	Ile	Leu
145				150						155				160	
Lys	Gly	Asp	Val	Ser	Met	Tyr	Leu	Leu	Leu	Lys	Asp	Gly	Gly	Arg	Tyr
			165					170						175	
Arg	Cys	Gln	Phe	Asp	Thr	Val	Tyr	Lys	Ala	Lys	Ser	Val	Pro	Ser	Lys
		180						185					190		
Met	Pro	Glu	Trp	His	Phe	Ile	Gln	His	Lys	Leu	Leu	Arg	Glu	Asp	Arg
		195				200						205			
Ser	Asp	Ala	Lys	Asn	Gln	Lys	Trp	Gln	Leu	Thr	Glu	His	Ala	Ile	Ala
	210				215						220				
Phe	Pro	Ser	Ala	Leu	Ala										
225					230										

<210> 35

<211> 681

<212> DNA

<213> Discosoma species

<400> 35

atggtgctgct cctccaagaa cgctcatcaag gagttcatgc gcttcaagggt gcgcatggag 60

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ggcaccgtga acggccacga gtctgagatc gagggcgagg gcgagggccg cccctacgag 120
ggccacaaca ccgtgaagct gaaggtgacc aagggcgggc ccctgccctt cgctggggac 180
atcctgtccc cccagttcca gtacggctcc aaggtgtacg tgaagcacc cgcgcacatc 240
cccgactaca agaagctgtc cttccccgag ggcttcaagt gggagcgcgat gatgaacttc 300
gaggacggcg gcgtggcgac cgtgacccaa gactcctccc tgcaggacgg ctgcttcac 360
tacaaggtga agttcatcgg cgtgaacttc ccctccgacg gccccgtaat gcagaagaag 420
accatgggct gggaggcctc caccgagcgc ctgtaccccc gcgacggcgt gctgaagggc 480
gagatccaca aggccctgaa gctgaaggac ggcggccact acctggtgga gttcaagtcc 540
atctacatgg ccaagaagcc cgtgcagctg cccggctact actacgtgga ctccaagctg 600
gacatcacct cccacaacga ggactacacc atcgtggagc agtacgagcg caccgagggc 660
cgccaccacc tgttctctga g

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681

<210> 36

<211> 678

<212> DNA

<213> Discosoma species

<400> 36

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atggcctcct ccgagaacgt catcaccgag ttcattgcgt tcaaggtgcg catggagggc 60
accgtgaacg gccacgagtt cgagatcgag ggcgagggcg agggccgccc ctacgagggc 120
cacaacaccg tgaagttgaa ggtgaccaag ggcggccccc tgccttccgc ctgggacatc 180
ctgtccccc agttccagta cggctccaag gtgtactgta agcaccgcc cgacatcccc 240
gactacaaga agctgtcctt ccccgagggc ttcaagtggg agcgcgtgat gaacttcgag 300
gacggcgggc tggcgaccgt gaccaggac tcctcctgc aggacggctg cttcatctac 360
aaggtgaagt tcatcgcggt gaacttcccc tccgacggcc ccgtgatgca gaagaagacc 420
atgggctggg aggcctccac cgagcgctgt taccgccgag acggcggtgt gaagggcgag 480
atccacaagg cctgaagct gaaggacggc ggccactacc tgggtggagt caagtccatc 540
tacctggcca agaagcccggt gcagctgccc ggctactact acgtggacac caagctggac 600
atcacctccc acaacgagga ctacaccatc gtggagcagt acgagcgcac cgagggccgc 660
caccacctgt tcctgtaa

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678

<210> 37

<211> 681

<212> DNA

<213> Discosoma species

<400> 37

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atgggtgcgt cctccaagaa cgtcatcaag gagttcatgc gcttcaaggt gcgcatggag 60
ggcaccgtga acggccacga gtctgagatc gagggcgagg gcgagggccg cccctacgag 120
ggccacaaca ccgtgaagct gaaggtgacc aagggcgggc ccctgccctt cgctggggac 180
atcctgtccc cccagttcca gtacggctcc aaggtgtacg tgaagcacc cgcgcacatc 240
cccgactaca agaagctgtc cttccccgag ggcttcaagt gggagcgcgat gatgaacttc 300
gaggacggcg gcgtggcgac cgtgacccaa gactcctccc tgcaggacgg ctgcttcac 360
tacaaggtga agttcatcgg cgtgaacttc ccctccgacg gccccgtaat gcagaagaag 420
accatgggct gggaggcctc caccgagcgc ctgtaccccc gcgacggcgt gctgaagggc 480
gagaccaca aggccctgaa gctgaaggac ggcggccact acctggtgga gttcaagtcc 540
atctacatgg ccaagaagcc cgtgcagctg cccggctact actacgtgga cgccaagctg 600
gacatcacct cccacaacga ggactacacc atcgtggagc agtacgagcg caccgagggc 660
cgccaccacc tgttctctga g

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681

<210> 38

<211> 675
 <212> DNA
 <213> Discosoma species

<400> 38
 atggcctcct ccgagaacgt catcaccgag ttcattgcgt tcaaggtgct catggagggc 60
 accgtgaacg gccacgagtt cgagatcgag ggcgagggcg agggccgccc ctacgagggc 120
 cacaacaccg tgaagctgaa ggtgaccaag ggcggccccc tgccttctgc ctgggacatc 180
 ctgtccccc agttccagta cggctccaag gtgtacgtga agcaccctgc cgacatcccc 240
 gactacaaga agctgtcctt ccccgagggc ttcaagtggg agcgcgtgat gaacttcgag 300
 gacggcggcg tggcgaccgt gacccaggac tcctccctgc aggacggctg cttcatctac 360
 aaggtgaagt tcatcggcgt gaacttcccc tccgacggcc ccgtgatgca gaagaagacc 420
 atgggctggg aggcctccac cgagcgctgt taccctcgcg acggcgtgct gaagggcgag 480
 acccacaagg ccttgaagct gaaggacggc ggccactacc tgggtggagt caagtccatc 540
 tacatggcca agaagccctg gcagctgccc ggctactact acgtggacgc caagctggac 600
 atcacctccc acaacgagga ctacaccatc gtggagcagt acgagcgcac cgagggccgc 660
 caccacctgt tcttg 675

<210> 39
 <211> 707
 <212> DNA
 <213> Anemonia sulcata

<400> 39
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 aacggccact acttcaagtg caccggcaag ggcgagggca acccctcga gggcaccag 120
 gagatgaaga tcgagtgat cgaggcggc cccctgcct tgccttcca catcctgtcc 180
 acctoctgca tgtacggctc caaggccttc atcaagtacg tgccggcat ccccgactac 240
 ttcaagcagt ccctccccga gggcttcacc tgggagcgca ccaccaccta cgaggacggc 300
 ggcttctga cgcgccacca ggacacctcc ctggacggcg actgcctggt gtacaagggtg 360
 aagatcctgg gcaacaactt ccccgccgac ggccccgtga tgcagaacaa ggccggccgc 420
 tgggagccct ccaccgagat cgtgtacgag gtggacggcg tgctgcgcgg ccagtccttg 480
 atggccctgg agtgccccg cggtcgccac ctgacctgcc acctgcacac cacctaccgc 540
 tccaagaagc ccgcctccgc cctgaagatg cccggcttcc acttcgagga ccaccgcac 600
 gagatcctgg aggagtgga gaagggcaag tgctacaagc agtacgaggc cgccgtgggc 660
 cgctactgcg acgcggcccc ctccaagctg ggccacaact gaagctt 707

<210> 40
 <211> 231
 <212> PRT
 <213> Anemonia sulcata

<400> 40
 Ala Ser Leu Leu Thr Glu Thr Met Pro Phe Arg Thr Thr Ile Glu Gly
 1 5 10 15
 Thr Val Asn Gly His Tyr Phe Lys Cys Thr Gly Lys Gly Glu Gly Asn
 20 25 30
 Pro Leu Glu Gly Thr Gln Glu Met Lys Ile Glu Val Ile Glu Gly Gly
 35 40 45
 Pro Leu Pro Phe Ala Phe His Ile Leu Ser Thr Ser Cys Met Tyr Gly
 50 55 60

Ser Lys Ala Phe Ile Lys Tyr Val Ser Gly Ile Pro Asp Tyr Phe Lys
65 70 75 80
Gln Ser Leu Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Thr Tyr Glu
85 90 95
Asp Gly Gly Phe Leu Thr Ala His Gln Asp Thr Ser Leu Asp Gly Asp
100 105 110
Cys Leu Val Tyr Lys Val Lys Ile Leu Gly Asn Asn Phe Pro Ala Asp
115 120 125
Gly Pro Val Met Gln Asn Lys Ala Gly Arg Trp Glu Pro Ser Thr Glu
130 135 140
Ile Val Tyr Glu Val Asp Gly Val Leu Arg Gly Gln Ser Leu Met Ala
145 150 155 160
Leu Glu Cys Pro Gly Gly Arg His Leu Thr Cys His Leu His Thr Thr
165 170 175
Tyr Arg Ser Lys Lys Pro Ala Ser Ala Leu Lys Met Pro Gly Phe His
180 185 190
Phe Glu Asp His Arg Ile Glu Ile Leu Glu Glu Val Glu Lys Gly Lys
195 200 205
Cys Tyr Lys Gln Tyr Glu Ala Ala Val Gly Arg Tyr Cys Asp Ala Ala
210 215 220
Pro Ser Lys Leu Gly His Asn
225 230

<210> 41

<211> 699

<212> DNA

<213> Anemonia sulcata

<400> 41

atggcctcct tctgaagaa gaccatgccc ttcaagacca ccatcgaggg caccgtgaac 60
ggccactact tcaagtgcac cggcaagggc gagggcaacc ccttcgaggg caccaggag 120
atgaagatcg aggtgatcga gggcggtccc ctgcccttcg ccttcacat cctgtccacc 180
tctgcatgt acggctccaa ggccttcac aagtacgtgt ccggcatccc cgactacttc 240
aagcagtcct tccccgaggg ctccacctgg gagcgacca ccacctacga ggacggcggc 300
ttcctgaccg cccaccagga cacctccctg gacggcgact gcctggtgta caaggtgaag 360
atcctgggca acaacttccc cgccgacggc cccgtgatgc agaacaaggc cgcccgctgg 420
gagccctcca ccgagatcgt gtacgaggtg gacggcgatg tgcgcgcca gtccctgatg 480
gccctgaagt gcccggcgcg ccgccacctg acctgccacc tgcacaccac ctaccgctcc 540
aagaagccc cctccgccct gaagatgccc ggcttccact tcgaggacca ccgcatcgag 600
atcatggagg aggtggagaa gggcaagtgc tacaagcagt acgaggccgc cgtgggcccgc 660
tactgcgacg ccgccccctc caagctgggc cacaactga 699

<210> 42

<211> 232

<212> PRT

<213> Anemonia sulcata

<400> 42

Met Ala Ser Phe Leu Lys Lys Thr Met Pro Phe Lys Thr Thr Ile Glu
1 5 10 15

Gly Thr Val Asn Gly His Tyr Phe Lys Cys Thr Gly Lys Gly Glu Gly
 20 25 30
 Asn Pro Phe Glu Gly Thr Gln Glu Met Lys Ile Glu Val Ile Glu Gly
 35 40 45
 Gly Pro Leu Pro Phe Ala Phe His Ile Leu Ser Thr Ser Cys Met Tyr
 50 55 60
 Gly Ser Lys Ala Phe Ile Lys Tyr Val Ser Gly Ile Pro Asp Tyr Phe
 65 70 75 80
 Lys Gln Ser Phe Pro Glu Gly Phe Thr Trp Glu Arg Thr Thr Thr Tyr
 85 90 95
 Glu Asp Gly Gly Phe Leu Thr Ala His Gln Asp Thr Ser Leu Asp Gly
 100 105 110
 Asp Cys Leu Val Tyr Lys Val Lys Ile Leu Gly Asn Asn Phe Pro Ala
 115 120 125
 Asp Gly Pro Val Met Gln Asn Lys Ala Gly Arg Trp Glu Pro Ser Thr
 130 135 140
 Glu Ile Val Tyr Glu Val Asp Gly Val Leu Arg Gly Gln Ser Leu Met
 145 150 155 160
 Ala Leu Lys Cys Pro Gly Gly Arg His Leu Thr Cys His Leu His Thr
 165 170 175
 Thr Tyr Arg Ser Lys Lys Pro Ala Ser Ala Leu Lys Met Pro Gly Phe
 180 185 190
 His Phe Glu Asp His Arg Ile Glu Ile Met Glu Glu Val Glu Lys Gly
 195 200 205
 Lys Cys Tyr Lys Gln Tyr Glu Ala Ala Val Gly Arg Tyr Cys Asp Ala
 210 215 220
 Ala Pro Ser Lys Leu Gly His Asn
 225 230

<210> 43

<211> 678

<212> DNA

<213> Artificial Sequence

<220>

<223> hybrid construct

<400> 43

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 accgtgaacg gccacgagtt cgagatcaag ggcgagggcg agggccggcc ctacgagggc 120
 cactgcagcg tgaagtcatt ggtgaccaag ggcggccccc tccccttcgc cttcgacatc 180
 ctacgcccc agttccagta cggcagcaag gtgtactgta agcaccgcc cgacatcccc 240
 gactacaaga agctcagctt ccccgagggc ttcaagtggg agcgggtgat gaacttcgag 300
 gagggcggcg tggtagcgt gagccaggac agcagcctca aggacggctg cttcatctac 360
 gaggtgaagt tcatcggcgt gaacttcccc agcgacggcc ccgtgatgca gcggcggacc 420
 cggggctggg aggcagcag cgagcggctc taccgccggg acggcgtgct caagggcgac 480
 atccacatgg ccctccggt cgagggcggc ggccactacc tcgtggagtt caagagcatc 540
 tacatggcca agaagcccgt gcagctcccc ggctactact acgtggacag caagctcgac 600
 atcaccagcc acaacgagga ctacaccatc gtggagcagt acgagcggac cgagggccgg 660
 caccacctct tcctctga 678

<210> 44
 <211> 225
 <212> PRT
 <213> Artificial Sequence

<220>
 <223> hybrid construct

<400> 44
 Met Ser Cys Ser Lys Asn Val Ile Lys Glu Phe Met Arg Phe Lys Val
 1 5 10 15
 Arg Met Glu Gly Thr Val Asn Gly His Glu Phe Glu Ile Lys Gly Glu
 20 25 30
 Gly Glu Gly Arg Pro Tyr Glu Gly His Cys Ser Val Lys Leu Met Val
 35 40 45
 Thr Lys Gly Gly Pro Leu Pro Phe Ala Phe Asp Ile Leu Ser Pro Gln
 50 55 60
 Phe Gln Tyr Gly Ser Lys Val Tyr Val Lys His Pro Ala Asp Ile Pro
 65 70 75 80
 Asp Tyr Lys Lys Leu Ser Phe Pro Glu Gly Phe Lys Trp Glu Arg Val
 85 90 95
 Met Asn Phe Glu Asp Gly Gly Val Val Thr Val Ser Gln Asp Ser Ser
 100 105 110
 Leu Lys Asp Gly Cys Phe Ile Tyr Glu Val Lys Phe Ile Gly Val Asn
 115 120 125
 Phe Pro Ser Asp Gly Pro Val Met Gln Arg Arg Thr Arg Gly Trp Glu
 130 135 140
 Ala Ser Ser Glu Arg Leu Tyr Pro Arg Asp Gly Val Leu Lys Gly Asp
 145 150 155 160
 Ile His Met Ala Leu Arg Leu Glu Gly Gly Gly His Tyr Leu Val Glu
 165 170 175
 Phe Lys Ser Ile Tyr Met Ala Lys Lys Pro Val Gln Leu Pro Gly Tyr
 180 185 190
 Tyr Tyr Val Asp Ser Lys Leu Asp Ile Thr Ser His Asn Glu Asp Tyr
 195 200 205
 Thr Ile Val Glu Gln Tyr Glu Arg Thr Glu Gly Arg His His Leu Phe
 210 215 220
 Leu
 225

<210> 45
 <211> 898
 <212> DNA
 <213> Discosoma species

<400> 45
 gtctcccaa gcagtggat caacgcagag tacgggggag tttcagccag tgacggtcag 60
 tgacagggtg agccacttgg tataccaaca aaatgagggtc ttccaagaat gttatcaagg 120
 agttcatgag gtttaagggt cgcatggaag gaacgggtcaa tgggcacgag tttgaaatag 180
 aaggcgaagg agaggggagg ccatacgaag gccacaatac cgtaaagctt aaggtaacca 240

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agggggggacc tttgccattt gcttgggata ttttgtcacc acaatttcag tatggaagca 300
aggtatatgt caagcaccct gccgacatac cagactataa aaagctgtca tttcctgaag 360
gattttaaag ggaaagggtc atgaactttg aagacggtgg cgtcgttact gtaaccagg 420
attccagttt gcaggatggc tgtttcatct acaagtcaag ttcattggcg ttgaactttc 480
cttccgatgg acctgttatg caaaagaaga caatgggctg ggaagccagc actgagcggt 540
tgtatcctcg tgatggcgtg ttgaaaggag agattcataa ggctctgaag ctgaaagacg 600
gtggtcatta cctagttgaa ttcaaaagta tttacatggc aaagaagcct gtgcagctac 660
caggttacta ctatgttgac tccaaactgg atataacaag ccacaacgaa gactatacaa 720
tcgttgagca gtatgaaaga accgagggac gccaccatct gttcctttaa ggctgaactt 780
ggctcagacg tgggtgagcg gtaatgacca caaaaggcag cgaagaaaaa ccatgatcgt 840
tttttttagg ttggcagcct gaaatcgtag gaaatacatc agaaatgtta caaacagg 898

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<210> 46

<211> 205

<212> PRT

<213> Discosoma species

<400> 46

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Met Arg Ser Ser Lys Asn Val Ile Lys Glu Phe Met Arg Phe Lys Val
 1          5          10          15
Arg Met Glu Gly Thr Val Asn Gly His Glu Phe Glu Ile Glu Gly Glu
          20          25          30
Gly Glu Gly Arg Pro Tyr Glu Gly His Asn Thr Val Lys Leu Lys Val
          35          40          45
Thr Lys Gly Gly Pro Leu Pro Phe Ala Trp Asp Ile Leu Ser Pro Gln
          50          55          60
Phe Gln Tyr Gly Ser Lys Val Tyr Val Lys His Pro Ala Asp Ile Pro
65          70          75          80
Asp Tyr Lys Lys Leu Ser Phe Pro Glu Gly Phe Lys Trp Glu Arg Val
          85          90          95
Met Asn Phe Glu Asp Gly Gly Val Val Thr Val Thr Gln Asp Ser Ser
          100          105          110
Leu Gln Asp Gly Cys Phe Ile Tyr Lys Ser Ser Ser Leu Ala Leu Asn
          115          120          125
Phe Pro Ser Asp Gly Pro Val Met Gln Lys Lys Thr Met Gly Trp Glu
          130          135          140
Ala Ser Thr Glu Arg Leu Gly His Tyr Leu Val Glu Phe Lys Ser Ile
145          150          155          160
Ile Met Ala Lys Lys Pro Val Gln Leu Pro Gly Tyr Tyr Tyr Val Asp
          165          170          175
Ser Lys Leu Asp Ile Thr Ser His Asn Glu Asp Tyr Thr Ile Val Glu
          180          185          190
Gln Tyr Glu Arg Ser Glu Gly Arg His His Leu Phe Leu
          195          200          205

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